

and the centroid.. D measures the deviation of the sound pattern for a concept from the average sound pattern, and can thus be interpreted as a measure of the amount of sound symbolism evoked by the concept.

To test whether D is a reliable property of concepts, it is first calculated separately for the languages of the Eastern and Western Hemispheres. The correlation between the two hemispheres is 0.59. This significant correlation shows that concepts differ reliably in their degree of sound symbolism. Table 4 below therefore includes D for each concept as calculated for all languages.

Table 4. Ninatic word shapes. D is the distance of first four segments from their overall average frequency distributions. The table is ordered by D in descending order.

meaning	shape	D	S	meaning	shape	D	S
BREAST	<i>muma</i>	23.68	30.7	DRINK	<i>iaaa</i>	13.49	25.0
I	<i>naa</i>	22.66	35.9	STAR	<i>karaaa</i>	13.37	26.6
KNEE	<i>kokaau</i>	22.50	28.0	NIGHT	<i>kanaa</i>	13.27	29.6
YOU	<i>nin</i>	21.63	30.6	PATH	<i>taaa</i>	12.85	30.2
NOSE	<i>nani</i>	18.76	27.3	SEE	<i>kana</i>	12.71	24.7
NAME	<i>nani</i>	17.53	32.4	MOUNTAIN	<i>kaaaa</i>	12.65	26.2
WE	<i>nina</i>	17.44	25.4	BONE	<i>kaka</i>	12.55	30.1
SKIN	<i>kaaa</i>	17.30	29.6	FISH	<i>aaia</i>	12.44	33.4
LEAF	<i>aaaa</i>	17.22	29.4	LIVER	<i>kanaa</i>	12.31	35.7
TONGUE	<i>aanaa</i>	16.52	30.1	EYE	<i>naki</i>	12.05	35.4
HORN	<i>kaaaa</i>	15.98	28.8	EAR	<i>kaaaa</i>	11.97	37.2
LOUSE	<i>kami</i>	15.60	42.8	TOOTH	<i>kaia</i>	11.79	30.7
COME	<i>haaa</i>	15.54	26.8	HEAR	<i>naaaa</i>	11.53	33.8
DOG	<i>kaaaa</i>	15.24	24.2	BLOOD	<i>aaaa</i>	11.33	29.0
STONE	<i>kaaa</i>	14.12	32.1	DIE	<i>kaaa</i>	11.32	36.3
FIRE	<i>kaaa</i>	14.09	25.7	NEW	<i>kamaa</i>	11.17	24.3
PERSON	<i>nanaa</i>	14.04	28.7	TWO	<i>aaaaa</i>	11.10	39.8
FULL	<i>kaiaa</i>	13.99	26.9	ONE	<i>tanaa</i>	10.93	27.4
HAND	<i>maka</i>	13.97	34.9	TREE	<i>aaaa</i>	10.88	33.6
WATER	<i>kaa</i>	13.74	37.4	SUN	<i>kana</i>	10.38	24.2

In Section 3 above we presented a test of whether what we interpret as sound symbolism might instead be a signal of a deep genealogical relation between all or most of the languages in the world. The D values allow us to make an additional test. If higher values of D are due to inheritance there should be a correlation between D and the degree of diachronic stability of the words referring to each concept. In [5] we presented results of measuring stabilities for items on the Swadesh list, resulting in the indices presented in the columns headed by S in Table 4. These S values represent the relative tendencies for words for the concepts in question to be cognate within groups of relatively closely related languages referred to as ‘genera’ in [13] (cf. [5] for further explanation). The correlation between D and S is -0.05 , not significantly different from zero. In conclusion, the kinds of words that tend to be inherited (rather than innovated or borrowed) are not the kinds of words that tend to show sound symbolism. We therefore argue, again, that inheritance is not a viable explanation for the effects that we interpret as being due to sound symbolism.